

Remarks

The above-referenced application has been reviewed in light of the Examiner's Office Action dated July 14, 2006. The Examiner's allowance of Claims 1-4 is gratefully acknowledged. By the present amendment, Claims 5, 12, 17, 18 and 23 have been amended. Accordingly, Claims 1-13, 15-19 and 20-23 are currently pending in this application. The Examiner's reconsideration of the rejections is respectfully requested, particularly in view of the above amendments and the following remarks.

In accordance with the Office Action, Claims 5-11 stand rejected under 35 USC § 112, second paragraph, for their recitation of "illuminating . . . target point" without particularly pointing out the corresponding structure. Accordingly, Claim 5 has been amended. Support for amended Claim 5 may be found in the application as originally filed (see, e.g., Application at page 9, line 16 through page 10, line 2). No new matter has been added.

In accordance with the Office Action, Claims 5-9 and 11 stand rejected under 35 U.S.C. §102(e) as being anticipated by United States Patent No. 6,731,718 to Ogura et al. Claim 5 has been amended.

Amended Claim 5 recites, *inter alia*, "An apparatus for co-registration of multi-modal images in a three-dimensional environment, the apparatus comprising . . . a controller in signal communication with the source of excitation light for illuminating a target point with excitation light by capturing electromagnetic-ray image data of a scene from the electromagnetic-ray

detector, identifying electromagnetic-ray image data associated with the target point, and projecting a beam of excitation light responsive to the electromagnetic-ray image data at the target point by converting image coordinates of the target point to light coordinates for directing the beam of excitation light, and processing the light coordinates to direct the beam of excitation light to the target point . . . .”

The '718 to Ogura is generally directed towards a radiographic apparatus with distance indication and/or optical field-of-view determination (see, e.g., Ogura at col. 2, lines 41-59; col. 8, lines 10-32). The distance and/or field-of-view are determined manually in advance of radiography. There is no inherent co-registration of the multi-modal images themselves.

While Ogura may use visible light in advance of radiography, amended Claim 5 sets forth a controller using the radiographic image to redirect the light. Accordingly, amended Claim 5 is neither taught nor suggested by the '718 to Ogura et al.

In accordance with the Office Action, Claims 12, 13, 15-19 and 21-23 stand rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 5,644,616 to Landi. Claims 12, 17, 18 and 23 have been amended.

Amended Claim 12 recites, *inter alia*, “projecting a beam of excitation light responsive to the electromagnetic-ray image data at the point on the target by transmitting the excitation light through a non-reflecting side of a one-way mirror and reflecting light received from a target from a reflecting side of the one-way mirror . . . .”

The '616 to Landi is generally directed towards a dual radiation targeting system. Landi may show using X-rays directed towards the center of field of view to locate a sub-surface structure, as well as providing a visible indication of the center of the field of view (see Landi at Abstract). The visible beam of Landi is simply directed to the same center point as the center of Landi's X-ray transmission. Landi fails to teach or suggest any readjustment of the visual indicator responsive to features shown only by the X-ray image itself. That is, the X-ray and visible beam are necessarily centered at the same point on the target. In addition, although Landi shows a radiolucent mirror (see Landi at col. 7, lines 47-48), Landi fails to teach or suggest the use of a one-way mirror for the visible light beam.

Accordingly, amended Claim 12 is neither taught nor suggested by the '616 to Landi. Amended Claims 17, 18 and 23 each recite similar features and are likewise neither taught nor suggested by Landi.

In accordance with the Office Action, Claims 5-7, 9 and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 6,229,873 to Bani-Hashemi et al. in view of United States Patent No. 2,474,421 to Hollstein. Claim 5 has been amended.

Amended Claim 5 recites, *inter alia*, "a controller in signal communication with the source of excitation light for illuminating a target point with excitation light by capturing electromagnetic-ray image data of a scene from the electromagnetic-ray detector, identifying electromagnetic-ray image data

associated with the target point, and projecting a beam of excitation light responsive to the electromagnetic-ray image data at the target point by converting image coordinates of the target point to light coordinates for directing the beam of excitation light, and processing the light coordinates to direct the beam of excitation light to the target point . . . .”

The '873 to Bani-Hashemi is generally directed towards superimposing X-ray and video images (see Bani-Hashemi at Abstract). The light source of Bani-Hashemi is merely the ambient room light in the examination room. Thus, Bani-Hashemi et al. fail to teach or suggest, “capturing electromagnetic-ray image data of a scene from the electromagnetic-ray detector, identifying electromagnetic-ray image data associated with the target point, and projecting a beam of excitation light responsive to the electromagnetic-ray image data at the target point” as recited in amended Claim 5.

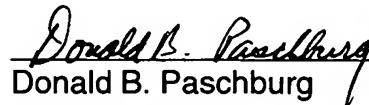
The '421 to Hollstein is generally directed towards X-ray equipment with a mirror for illuminating a target area with redirected light. Unfortunately, Hollstein fails to cure the deficiencies of Bani-Hashemi et al., particularly with respect to “a controller . . . for illuminating a target point with excitation light by capturing electromagnetic-ray image data of a scene from the electromagnetic-ray detector, identifying electromagnetic-ray image data associated with the target point, and projecting a beam of excitation light responsive to the electromagnetic-ray image data at the target point by converting image coordinates of the target point to light coordinates . . . .” as recited in amended Claim 5. Accordingly,

amended Claim 5 is neither taught nor suggested by the '873 to Bani-Hashemi et al. in view of the '421 to Hollstein, whether taken alone or in combination with any of the other references of record in this case.

Conclusion:

Claims 1-4 have been allowed. The Examiner's allowance of these claims is gratefully acknowledged. It is respectfully submitted that amended independent Claims 5, 12, 17, 18 and 23 are each in condition for allowance for at least the reasons stated above. Since dependent Claims 6-11, 13, 15-16, 19, and 21-22 each depend from one of the above claims and necessarily include each of the elements and limitations thereof, it is respectfully submitted that these claims are also in condition for allowance for at least the reasons stated, as well as for reciting additional patentable subject matter. Thus, each of Claims 1-13, 15-19 and 20-23 is in condition for allowance. All issues raised by the Examiner having been addressed, reconsideration of the rejections and an early and favorable allowance of this case are earnestly solicited.

Respectfully submitted,

  
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